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ABSTRACT

Gilbert (1978) developed a Potential for Improving Performance (PIP) formula based on worth, value, and cost. Worth related the value of a performance to its cost. The PIP related the worth of exemplary performance to the worth of average performance. This offered an opportunity for improvement by making appropriate changes through training or other means. Application of Gilbert's PIP formula to an assessment of training needs resolved a training decision in a collating department. A permanent staff of five workers who assembled sample books was supplemented with regular temporary workers. Rank ordering of data according to employee experience showed newer employees produced fewer books. By using the group configuration, experienced employees' productivity decreased. The decision was made to train one trainer and standardize procedures by establishing a stationary training workstation for new employees. Gilbert's PIP formula was also applied to chemistry courses in a community college. Due to increased demand, reducing lab time was considered. Two instructors of chemistry laboratory sessions logged the amount of time students required to complete the lab. Observation of lab sessions showed that, when the instructor required students to read the lab handout ahead of time and complete a quiz at the beginning of the lab, students finished sooner. The PIP differed from traditional measures by taking the view that people will perform according to their potential when given the opportunity and offered an alternative to extensive statistical data analysis. (YLB)

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Implementing Gilbert's PIP Formula in the Workplace

Opportunities for improvement appear even in the most productive work environments. Once one worker completes a task satisfactorily, it's only a matter of time before someone else finds a way to do the job even better. In a work environment that supports creativity, flexibility and adaptability, human beings will consistently improve upon their own competence. Measuring that potential for improvement offers a solid means to an end.

One stumbling block to improving competence is confusing behavior with performance. Behavior is a reaction to a stimulus and a means to an end. An individual's conduct results from behaviorial characteristics. Measuring behavior offers an interesting field of study for psychologists. However, behavior only partially contributes to a worker's overall competence. Competence results from performance as the consequence of behavior.

It's possible to assess performance in terms of the goals and task demands that a worker accomplishes. Those goals or task demands have value. In a manufacturing environment, for example, hourly production of quality units provide a means of measurement. In a service environment, on the other hand, the unit of value must be determined according to the goals of that service. For example, the number of returning customers may be more important to one organization while the number of customers served in one month may be valuable to another. In either case, the measure of performance is quantifiable.

It's also necessary to determine the value of performance in terms of the cost. The cost of behavior can't overwhelm the value of the performance. Worth relates the value of a performance to its cost as shown in Figure 1. For example, the value of a service representative can be determined by the number of customers gained and cost determined from those lost within a month. If a service representative maintains 13 regular customers, gains 2 customers and loses 5 during a month, the representative's worth index equals 3. If overall sales are important, then the total sales for a period of time contribute to value while advertising, travel, and other expenses contribute to cost.

Establishing a measurement of performance opens the door for improving that performance. In Human Competency (McGraw-Hill, 1978), Thomas Gilbert discusses his Potential for Improving Performance (PIP) formula based on worth, value, and cost. Basically, the PIP relates the worth of exemplary performance to the worth of average performance (Figure 2). This offers an opportunity for improvement by making appropriate changes through training or other means. Implemented in a work environment free from cultural bias and distracting competition, workers can use their own PIPs as measurement of their own personal improvement.

Figure 1. CALCULATING THE WORTH INDEX

$$\text{Worth} = \frac{\text{Value}}{\text{Cost}} = \text{Worth Index}$$

An inexperienced farmer yields $1,000 per acre with a cost of $500.

$$\text{Inexperienced Farmer's Worth} = \frac{\$1,000}{\$500} = 2$$

An experienced farmer yields $2,000 per acre with a cost of $250.

$$\text{Experienced Farmer's Worth} = \frac{\$2,000}{\$250} = 8$$

Figure 2. CALCULATING THE PIP VALUE

$$PIP = \frac{\text{Exemplary Worth}}{\text{Average Worth}}$$

AVERAGE WORTH

An inexperienced farmer yields $1,000 per acre with a cost of $500.

$$\text{Inexperienced Farmer's Worth} = \frac{\$1,000}{\$500} = 2$$

EXEMPLARY WORTH

An experienced farmer yields $2,000 per acre with a cost of $250.

$$\text{Experienced Farmer's Worth} = \frac{\$2,000}{\$250} = 8$$

$$PIP = \frac{\text{Exemplary Worth}}{\text{Average Worth}} = \frac{8}{2} = 4$$

The inexperienced farmer can improve yield four times.

Case Study I:

Applying Gilbert's PIP formula to an assessment of training needs resolved a training decision at a collating department. Workers assembled sample books for the advertising division of a paper producer. The content and style of the sample books changed frequently and the general production method proved to be the most cost effective. A permanent staff of 5 was supplemented with regular temporary workers. The temporary employees were hired through an agency when demands for the sample books increased. These temporary employees were trained on-the-job by working with a permanent employee in a small group. Some returned many times and some were new each time. The supervisor felt that the productivity could be improved with a training program.

Unit of Worth = # Sample Books / Day

Groups

I		II		III	
Employee	# Books	Employee	# Books	Employee	# Books
1	89	6	87	11	86
2	76	7	68	12	79
3	63	8	68	13	58
4	48	9	48	14	46
5	32	10	32	15	33
Average =	61.6	Average =	60.6	Average =	60.4

Overall Average = 60.9

$$\text{PIP for Groups} = \frac{61.6}{60.9} = 1.0 \qquad \text{Employee PIP} = \frac{89.0}{60.9} = 1.5$$

By rank-ordering the data according to employee experience, it was apparent that the newer employees produced fewer sample books, so experience was the major factor. It was also apparent that the three group leaders, permanent employees, did not differ in their training effects on the new employees. However, by using the group configuration, experienced employees' productivity decreased. The decision was made to train one trainer and standardize procedures as much as possible by establishing a stationary training workstation for new employees. New employees were assigned to the same workstation with only one permanent employee assigned to training.

Case Study II:

This academic situation may be similar to training programs where resources are costly. A community college offered introductory chemistry courses. Due to increased demand for laboratory time, a committee considered reducing 3-hour chemistry labs to 2 hours. Administrators voiced a concern that 2 hours would not be adequate and a study began. At the time, 2 different instructors taught 4 chemistry laboratory sessions. These instructors were asked to log the amount of time that the students required to complete the lab during the semester.

Lab	A	B	A	B	Average/Lab
1	1.50	2.50	1.25	3.00	2.065
2	1.00	3.00	1.50	3.00	2.125
3	1.50	2.50	2.00	3.50	2.375
4	1.00	2.50	1.00	2.50	1.750
5	1.00	3.00	1.00	2.00	1.750
6	1.50	3.00	1.50	3.00	2.250
7	1.50	2.50	1.50	3.00	2.125
8	1.00	2.00	1.00	2.00	1.500
9	1.25	1.50	1.00	2.00	1.450
10	1.25	2.00	2.00	2.50	1.950
Average	1.25	2.45	1.37	2.65	1.950

$$\text{Instructor A's PIP} = \frac{1.31}{1.95} = 0.67$$

$$\text{Instructor B's PIP} = \frac{2.55}{1.95} = 1.31$$

The next step in the study was to speak with the instructors and observe a lab session. Observation showed that Instructor A required students to read the lab handout ahead of time and complete a quiz at the beginning of the lab session. These students were more orderly, damaged less glassware, used reasonable quantities of reagents and finished sooner. Instructor A also interacted with the students more than Instructor B who remained at the front lab station.

CHARACTERISTICS OF PIP

The PIP differs greatly from traditional measures such as IQ tests or personality assessments. Unlike traditional behavioral measures, the PIP takes the view that people will perform according to their potential when given the opportunity. Competence takes on a new dimension when it is assessed in terms of performance and accomplishment.

The PIP also offers an alternative to extensive statistical data analysis. Especially where lengthy statistical analysis is not cost effective, the PIP offers a quantitative means of assessment. By quantifying competence, the PIP may support decisions otherwise non-verifiable. The key to implementing the PIP is that competence is the consequence of performance. Behavior is only a means to that consequence and should be viewed in this manner. It is possible to measure all performance.